HONORS THESIS ABSTRACT
THESIS SUBMISSION FORM

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ABSTRACT (100-200 WORDS):

This tutoring guide is designed specifically for education majors who assist fellow students that have not successfully passed the mathematics portion of the Praxis Examination. This exam is required for all education majors, and all three sections must be passed before the student can complete upper level courses. This guide includes two tests,which closely resemble the actual mathematics test, a quiz on measurement, various worksheets, and answer keys. Furthermore, this guide contains several suggestions for the tutor to follow before, during, and after the actual tutoring session has taken place.

To compile the mathematics questions and problems presented in this tutoring guide, I merely organized actual problems I had used with students I tutored during my junior year at Northern Illinois University. To categorize the actual problems into specific types, I collaborated with Dr. Diane Kinder and Maria Ovalle, who was a fellow tutor. The suggestions I listed at the end of the guide were based on my own observations regarding techniques that were successful, as well as helpful tutoring hints I located in books and other related literature. This guide has been specifically designed to be implemented during a one-on-one tutoring session.

TEST #1

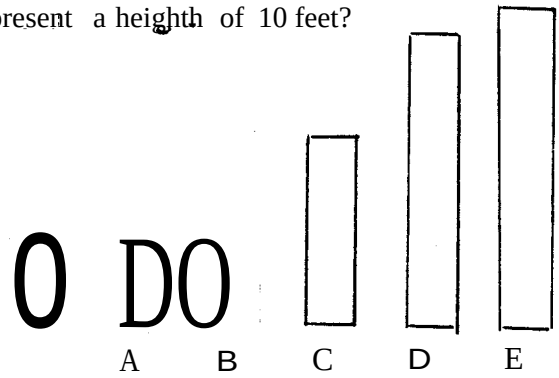
Mathematics
Time- 50 Minutes
40 Questions

1. A map of the United States is made so that one inch represents 200 miles. How many inches would represent 2,000 miles?

   (A) 2 inches (B) 4 inches (C) 5 inches

   (C) 10 inches (E) 20 inches

2. In the figure below, if the first rectangle represents a heighth of 3 feet, which rectangle would represent a heighth of 10 feet?

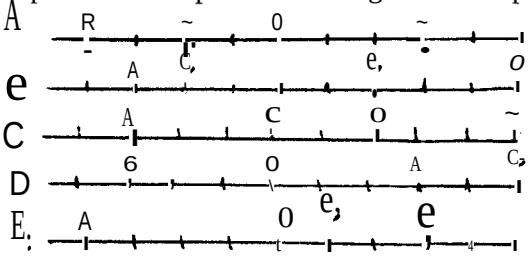


   (A) A (B)B (C)C (D)D (E)E

3. The department store is offering a sale on coats. Each coat has been reduced by 20%. Don bought a coat on sale for $120. The original price of the coat was:

   (A) $96
   (B) $100
   (C) $144
   (D) $140
   (E) $150

4. Points A, B, C, and D are all on the same number line. If A0=5 and 80=3, which number line represents the possible arrangement of points?



(A) A (8)8 (C)C (O)D (E)E

5. A cake pan measured 9 inches x]3 inches. How many two inch chocolate bars can be cut from the pan?

(A) 20
(8)22
(C) 24
(0)28
(E) 48

6. A professor claims that when an odd and even number are multiplied, the product always consists of one odd and one even digit Which of the following equations shows the professor is not correct?

(A)2x9=J8
(8) 5 x6 =30
(C) 7x8=56
{PY4x 11=44
(E) 3 x 6 =]8

7. Which of the following represents the greatest amount?

(A).3+1.7+.9
(8) .3 x 1.7x .9
(C)(.3 x 1.7) + .9
(O).3 + (1.7 x .9)
(E)(.3 + 1.7)x.9

8. ~ +--L =
100 10000

(A) 1.001
(8) .1001
(C) .01001
(D) .1010
(E) .0010

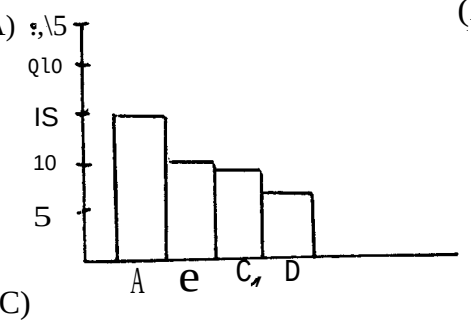
9. Cereal is priced at one box for $2.43 or three boxes for 57.20. How much money is saved per box when a customer buys three boxes of cereal?

(A) $.02
(B) $.03
(C) $.09
(D) $.20
(E) $.81

10. The chart below shows how sales representatives are distributed in four insurance offices across four states. Which of the figures best represents how the representatives are distributed?

STATE	# of Representatives
A	10
B	15
C	9
D	6

(A)



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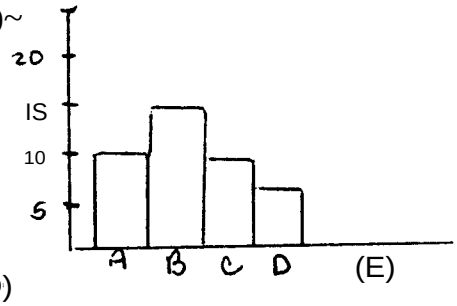

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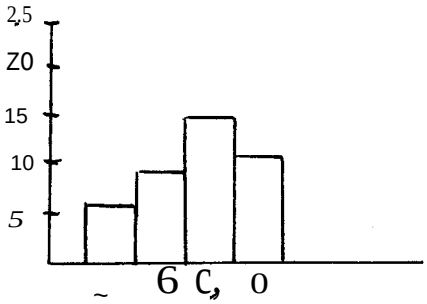

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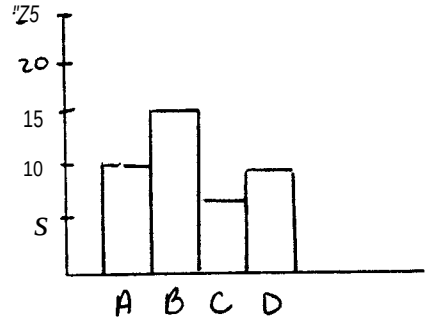
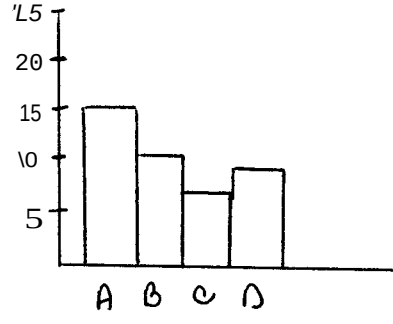
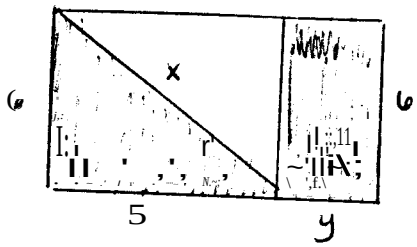


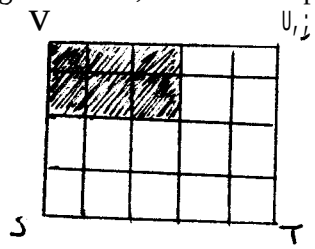


t t. To find the area of the shaded portion. the value of which letter needs to be determined?



(A) x only
(B) yonly
(C) both x and y
(D) either x and y, but not both
(E) neither x or y

12. In the figure below, the shaded portion is what fraction of the region STUV?



(A) 213
(B) 3/2
(C) 3/10
(D)]0/3
(E) 3/5

13. How can the following relationship be represented?
B is five times more than that of III of C

(A)2B=5C
(B) B = 5(J/2 C)
(C) 5B = 112 C
(D)B= 5(2C)
(E) J/2B = 5C

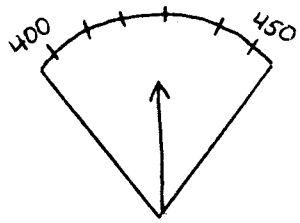
14. Which of the following is equal to three quarters (3/4) of one million?

(A) 75,000
(B) 750,000
(C) 7,500,000
(D) 1/75,CXXJ
(E)]1750,000

15. A study done ofajob salary guide showed that high school teachers earn 15% more per year than elementary teachers. If this trend continues, the annual salary of high school teachers will be what percent greater than that of elementary education teachers after three years?

(A) 5%
(B)]0010
(C) 15%
(D) 45%
(E) 50%

16. On the scale below, the arrow points to:

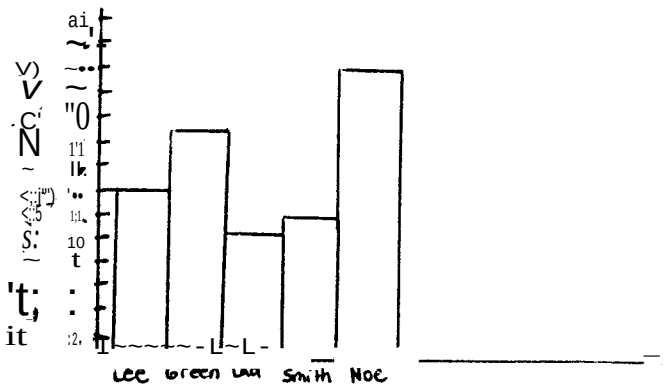


(A) 430
(B) 435
(C) 440
(D) 465
(E) 470

17. A classroom of28 has 12 girls. The ratio of females to males in the classroom is:

(A) 3:4
(B) 3:7
(C) 4:3
(D) 4:7
(E) 7:3

18. By looking at the graph below, how many magazines did Mrs. Smith's 3rd grade class sell?



clA.5S

(A))0
(B) I I
(C) 12
(D)]5
(E) 20

19. Which formula below shows the relationship between x and y in the following table?

x	y
5	13
7	17
10	23
11	25
15	33

(A) 2x + 3 =y
(B) 3x -4 =y
(C)3x - 2 =y
(0) 2x + 4 =y
(E) x + 8=y

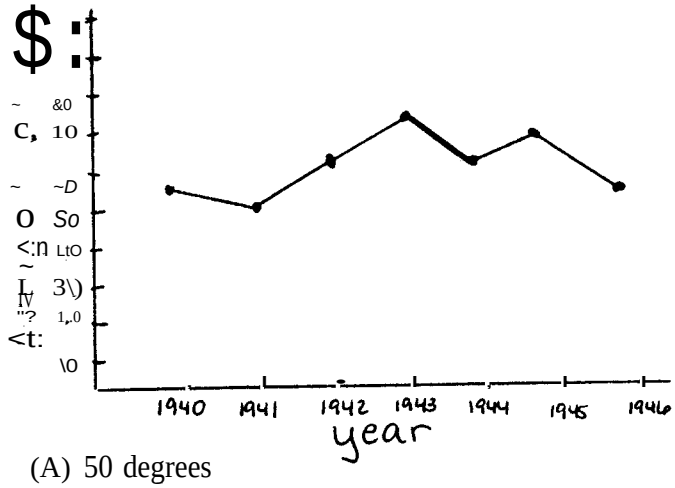
20. 6.23 is between

(A) 6.09 and 6.20
(B) 6.00 and 6.03
(C) 6.20 and 6.30
(0) 6.70 and 7.00
(E) 6.02] and 6.025

21. Which of the following could be the length of a bicycle?

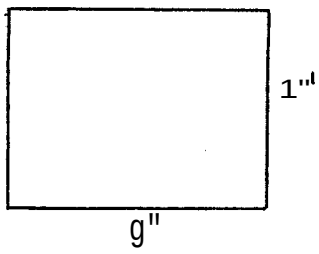
(A) 500 millimeters
(B) 250 centimeters
(C) 2 meters
(D) 1 decameter
(E) .5 kilometers

22. According to the graph, what was the average temperature in 1942?



(A) 50 degrees
(B) 60 degrees
(C) 70 degrees
(D) 80 degrees
(E) 85 degrees

23. What is the perimeter, in inches, of the rectangle?



(A) 12.5
(B) 21.5
(C) 20
(D) 31.5
(E) 36

24. Which of the following is a composite number?

(A) 4
(B) 11
(C) 17
(0)29
(E) 57

25. Two dice are thrown for a board game. The sum of the two dice is eight What is the probability that the same number is showing on both die?

(A) 0
(B) 115
(C) 1/6
(0)215
(E)l

26. Which of the following fractions is the greatest?

(A) 5/1]
(B) 4/9
(C) 1]/21
(0) 16/25
(E) 49/99

27. Each of five customers received discounts on furniture. Which is the greatest discount?

(A) 5% of750
(B) l00lo of 500
(C)]2.5% of350
(0) 15% of 300
(E) 20% of 200

28. It took Denise 3 hours to do 45 math problems. At this rate, how many hours would it take her to do 30 more math problems?

(A) 1
(B)].5
(C) 2
(0) 2.5
(E) 15

29. On a four page math exam, the students had to answer 7-10 multiple choice questions,)0-12 true false questions, and 3-4 essay questions. Those students who answered the maximum number of questions received extra points. What was the minimum and the maximum numbers, respectively, of questions each student had to answer?

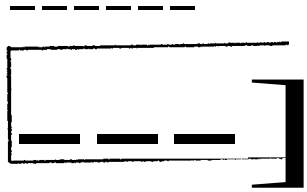
(A) 3 and 12
(B) 3 and 26
(C) 20 and 26
(O)]4 and 32
(E) 21 and 26

30. If A, 11, and r are positive numbers, and A ='}f?, then π =

(A) *Ar:l* (B) r^2/A *(C)Nr*
(0) A /r~ (E) A^2r

31. Six guests, A,a,C,D, and E were invited to dinner. The table the guests sat at is shown below. If A and E sat at either ends of the table and D did not sit adjacent to either A or E, which of the following must be true?

(A) C sat next to A
(B) B sat next to E
(C) E sat next to D
(D) A sat next to D
(E) C sat next to D



32. The length ofa pencil was measured in centimeters. The length of the pencil expressed in inches would be:

(A) 1/10 as great
(B)]/]2 as great
(C) two times as great
(D)]0 times as great
(E) 12 times as great

33. Sue invited five friends to her birthday party- Mike, Jane, Lynn, Bob, and Ann. Some of Sue's friends showed up for her party.

Which of the following statements is NOT consistent with the above statements?

(A) Mike showed up at Sue's birthday party.
(B) Jane did not show up at Sue's birthday party.
(C) 4 of Sue's friends came to ber party.
(D) All 5 of Sue's friends came to her party.
(E) 2 of Sue's friends did not come to her party.

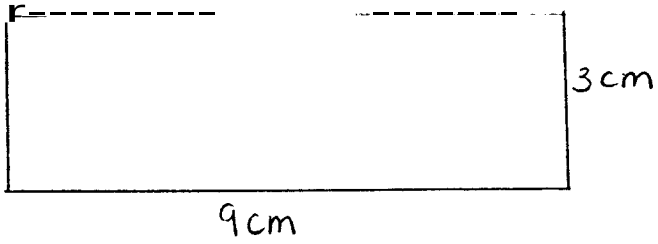
34. If.QOO5X R = 5, then R =?

(A)]0
(B) 100
(C) 1000
(D) 10,000
(E) lOO~OOO

35. Beth was trying to determine how many eggs she would need for the Easter egg hunt. She accidentally divided by four instead of multiplying by four. She got the answer 84 instead of the correct answer. The answer should have been:

(A) 21
(B) 22
(C) 80
(O) 336
(E)]344

36. What is the area of the rectangle, in square centimeters?



(A)3
(B) 12
(C) 24
{0)27
(E) 36

37. A and 8 are a pair of real numbers when multiplied equal 200. If one number is halved and the sum still equals 200~ what happened to the other number?

(A) The other number was halved..
(B) The other number was doubled..
(C) The other number decreased by .5
(0) The other number increased by .5
(E) There was no effect on the other number.

38. JfSx5=T~thenSx]0=

(A)2T
(B)5T
(C) lOT
(O) T-2
(E) T - 5

39.If 5 miles = 1 street, how many feet are in 4 streets?

(A) 20
(8) 240
(C) 5280
(0)21,120
(E)]05,600

40. How many 3 inch tiles fit on a kitchen floor that is 18 inches long and 20 inches wide?

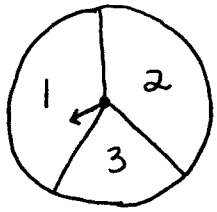
(A) 9
(B) 76
(C) 90
(0)120
(E) 300

Time: SOMinutes
40 Questions

l. Whieh of the following fractions is the smallest?

(A) 31130
(B) 52/50
(C) 78175
(O)]021]00
(E) 1511150

2. Looking at the diagram below, if the spinner was spinned one time, what would be the probability of spinning a one or a two?

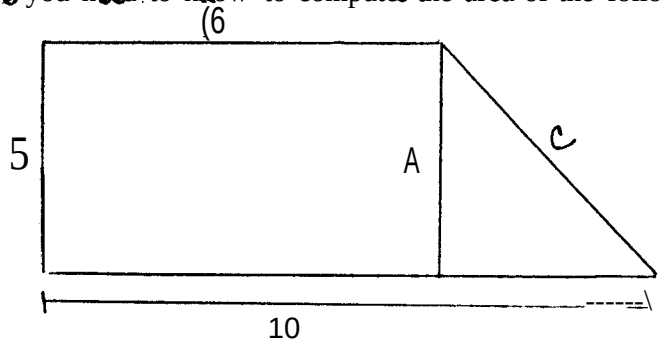


(A) 1/3
(B) 112
(C) 2/3
(0) 3/4
(E) 312

3. Ifa portrait is 8" by 10", in how many centimeters can that measurement be expressed?

(A).8 em x.10 em
(B) 80 em by 100 em
(C) 98 em by]20 em
(0) 128 em x 168 em
(E) 160 em x 200 em

4. What do you need to know to eompute the area of the following figure?



(A)onIy A
(B)onIyB

(C) only C
(D) either B or C
(E) either A or B

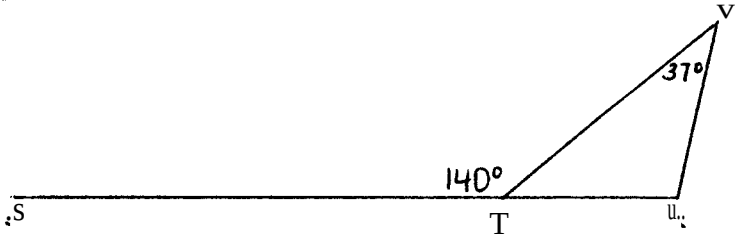
5. Another way of expressing the ratio 80:20 is:

(A) 1:4
(B) 4:]
(C) 2:8
(D)]0:2
(E) 4

6. Which of the following statements could be expressed by the following statement:
210-43=167

(A) How much money could be saved if a product priced at $210 was 20% off?
(B) The average number of college students in all sections of Math]01.
(C) The sum of boys and girls at Lincoln Elementary.
(D) How many students passed the biology exam.
(E) What is the product of 210 and 431

7. GivenATIN with Z, VTS = 140° and $LV = 37°$, find the measure of L U in degrees:



(A) 37^4
(B) 53°
(C) 102-
(D) 103'
(E) 177^o

8. If Patrick jogs 8 miles across 3 days, and Jane runs 5 miles each day for 4 days, which of the following statements cannot be derived from below?

(A) The total number of miles Patrick and Jane ran
(B) The average number of miles run per day.
(C) The number ofmiJes Patrick ran each day.
(D) The number of miles Jane ran total.
(E) How many more miles Jane ran than Patrick

9. If $2x + 5 = y$, then x =

(A)2y·5
(B) y/5· 2
(e) 5y+ 2
(O)y/2 + 5
(E) y/2. 5

10. On a map. one inch represents 175 miles. If two cities were separated by 875 miles. how many inches would that represent?

(A) 4
(B) 5
(e) 700
(D) 725
(E) 1125

] 1. Round off the following number to the nearest hundredth place:
5264.9257

(A) 5200
(B) 5300
(C) 5264.9
(O) 5264.93
(E) 5264.926

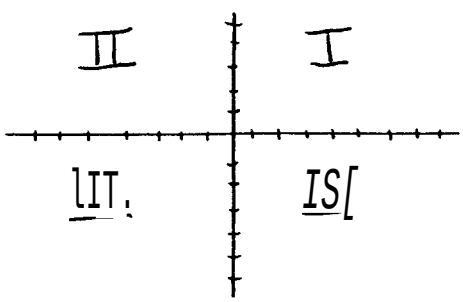
12. Which of the following is a prime number?

(A) 8
(B) 11
(e) 2]
(0)27
(E) 33

13. The fraction 1/16is between which of the following numbers?

(A) .05 and .06
(B).6 and.7
(C) .061 and .062
(O) .61 and .63
(E) .062 and .065

]4. In the coordinate graph below. in which quadrant would the point represented by (6. -4) be found?



(A) I
(B)TI
(C) rn
(D)N
(E) cannot be determined

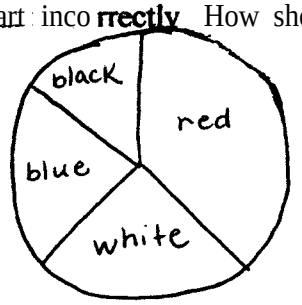
15. In a neighborhood with 15 homes. a total of 30 pets can be found running around Which of the following must be true?

(A) Each home contains two pets.
(B) Every bome has a pet
(C) Some homes have only one pet
(D) Some homesbave more pets than other homes.
(E) There is an average of two pets per home.

16. A woman bought 3 gallons of ice cream at $2.79 per gallon. How much change would she receive from a $10 bill?

(A) $1.62
(B) $1.72
(C) $7.00
(O) $7.31
(E) $8.37

17. Lee created a pie chart to represent the color of cars his co-workers have. He found that out of] 6 coworkers, , 6 have red cers,, 5 have white cars. 3 have blue cars,, and 2 have black cars. He realized that he made the pie chart incorrectly How should he fix the chart?



(A) decrease the amount of red and increase the amount of white
(B) increase the amount of white and decrease the amount of blue
(C) decrease the amount of blue and increase the amount of black
(O) decrease the amount of red and increase the amount of blue
(E) increase the amount of red and increase the amount of white

t 8. A rectangle has two sides with the dimensions of 6 and 8. What would be the sides of a square with the same perimeter?

(A) 7
(B)]2
(C)t4
(D) 28
(E) 48

19. Out of 340 employees, 255 earned a raise at the end of the year. What percent of employees did not earn a raise?

(A) 25%
(B) 30%
(C) *75%*
(D) 85%
(E) 90%

20. What is the probability of tossing a coin four times and having it land heads up 3 out of 4 times?

(A) *3/8*
(B) *]/2*
(C) *3/4*
(D) *4/3*
(E) 8/3

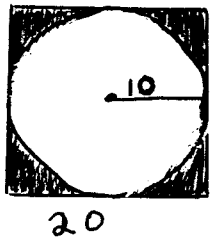
2] .. 023 is how many times smaller than 23,0001

(A) 100
(B) 1,000
(C) 10,000
(D))00,000
(E) 1,000,000

22. A couch is on sale from its' original price of$525. It can now be sold for $420. What is the percentage of the discount?

(A) 15%
(B) 20%
(C) 300A»
(D) 50%
(E) 70%

23. The area of the shaded region in the following figure is approximately:



(A) 20
(B) 25
(C) 40
(D) 80
(E) 100

24. To determine approximately how many inches are in 10 yards, you must

(A) Divide the 10 by 3 and then multiply by]2
(B) Divide the)0 by 3 and then divide by 12
(C) Multiply the 10 by 3 and then multiply by 12
(D) Multiply the 10 by 3 and then divide by 12
(E) An approximation can not be determined, .

25. Mary is 19 today. Two years ago. she was 3 years younger than twice Jim's age. How old is Jim now, using an x to represent his current age?

(A) 17 =2x-3
(B)17-3=2x
(C) 17 = 2x + 3
(D)19=2x-3
(E) 19 - 3 = 2x

26. Mike has pennies and dimes in his backpack. He has half as many pennies as dimes. Using x as a variable to represent pennies, which of the following equations represents the amount of money in Mike's bag?

(A) lOx + 5x
(B) 1110 x + x
(C) 10(10x) + 5x
(D) x+ 2x
(E) lOx + x

27. Jenny can run 4 laps around a track in 8 minutes. Which of the following statements is true?

(A) Jenny ran each Jap in 2 minutes.
(B) Jenny ran some 2 laps under 2 minutes and 2 laps over 2 minutes.
(C) Jenny will run 4 more Japs in 8 minutes.
(D) Jenny averaged 2 minutes per lap.
(E) Jenny ran a mile.

28. 200 x 17 = B. therefore 200 x 19 would equal:

(A)2B
(B) B+ 2
(C) B + 2(200)
(D)B+ 19
(E)]9B

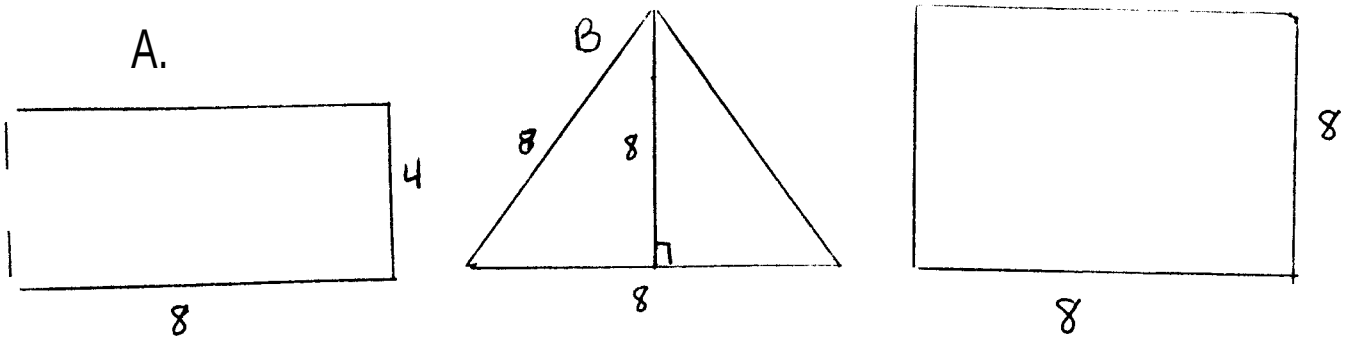
29. A rectangle that is 8" x 10" is cut into 1" by 1" squares. What is the maximum number of squares that can be cut?

(A) 18
(B) 36
(C) 80
(D)]60
(E) 200

30. A lamp is marked down 15% to $125. What is the equation to find the original price. C?

(A) C = $125 x .15
(B) *.8SC* = $125
(C) .15C = $125
(D) C = $125 x *.85*
(E) *C/.1S* = $125

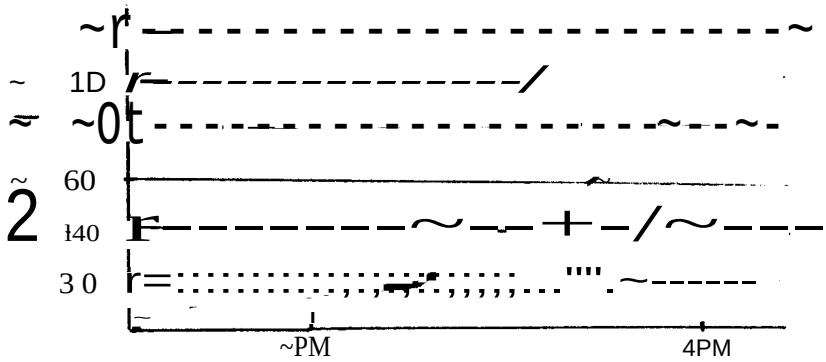
31. The areas of which of the following figures are equal?



(A) A, B, and C
(B) A and B
(C) A and C
(D) B and C
(E) none of the areas are equal

32. Which of the following units is best to use to describe the heigbth of a house?

(A) centimeters
(B) decimeters
(C) meters
(D) hectometers
(E) kilometers



33. According to the graph above, approximately how many books were sold at 3:00 PM?

(A) 25
(B) 30
(C) 35
(D) 40
(E) 45

34. According to the graph, approximately how many books were sold at 3:45 PM?

(A) 30
(B) 35
(C) 40
(0)50
(E) 55

35. What equation results from multiplying (x - 2)(x + 5)?

(A)2x -]0
(B)x + 3x -10
(C)x +7x-10
(D) 2x + 3x -10
(E) 2x + 7x -]0

36. The product of2 numbers equals one of the numbers. Which equation represents that statement?

(A)X+ Y=X
(B) X - Y=X
(C) XJY = X
(D) X x Y=X
(E) X x Y=YxX

37. How many students are there at Lincoln Elementary if 40% are girls and there are 120 girls total?

(A) 48
(B) 168
(C) 182
(0)200
(E) 300

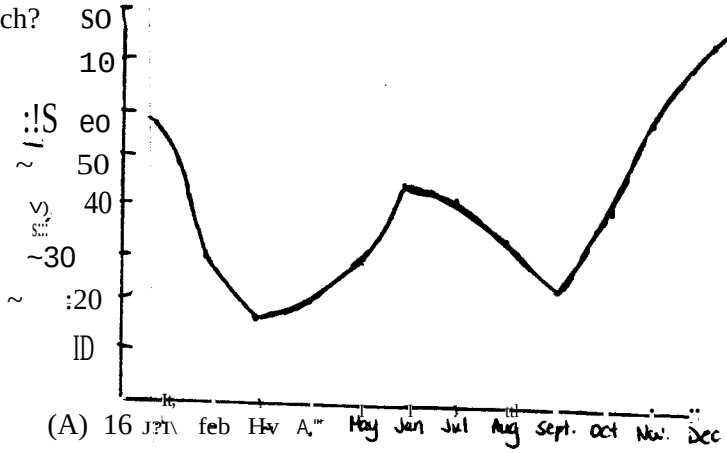
38. lfx is a positive even integer in the equation -lx = y, then y must be

(A) a positive even integer
(B) a negative even integer
(C) -1
(0) 1
(E) a negative odd integer

39. Mark approximated 25 times 45 as 20 times 40, but the answer was way too low. Multiplying what two numbers would give Mark a better approximation?

(A) 30 times 50
(B) 30 times 40
(C) 30 times 30
(0) 40 times 40
(E) 20 times 30

40. According to the chart below, how many more wagons were sold in December than in March?



(A) 16
(B) 45
(C) 58
(O)60
(E) 92

ANSWER KEY FOR TEST #1

1. C, Student needs to divide 2,000 miles by 200 miles

2. E, The first rectangle (A) represents 1.5 ft., the second rectangle (8) represents 3 ft., the third rectangle (C) represents 6 ft., the fourth rectangle (D) represents 9 ft., and the last rectangle (E) represents 1 ft.

3. E, Students need to divide $120 by .8.

4.C

5. C, Student should make a diagram to represent the measurement of the cake pan and then mark offbrownie slices which measure 2" by 2".

6. D, The number four is an even digit Student should understand that "digit" means number.

7. A, The student should have an understanding that the problem in brackets needs to be solved first.

8. D, Student needs to change each fraction into a decimal and then add together the decimals.

9. B~Student needs to divide $7.20 by 3 to determine the cost of one box of cereal. The student then needs to subtract that answer from $2.43.

IO.B

11. B, Student does not need to know x to determine the area of the triangle. To find the area of the rectangle, however, y needs to be known.

12.C, Student needs to count the shaded number of squares and compare the number to the total number of squares to determine the ratio.

13. B

14.0, Student must have an understanding that *3/4* also equals the decimal .75. The student must then multiply. 75 by 1,000,000 to determine the answer.

15. C

16. A

17. A, Student must subtract the number of girls from the total number of students. The answer is 16, which is the number of boys in the classroom. Therefore, the ratio of girls to boys is 12:16, or when reduced, 3:4.

18. C

19. A, Student needs to plug in the numbers for x and y in each equation to see which depicts the relationship between x and y in the table.

20. C, Student needs to have an understanding of decimal place value.

2]. C~Student needs to understand that there are approximately 3 feet in 1 meter. A bicycle is approximately 6 feet in length.

22.B

23. C, Student must understand that the perimeter of a rectangle is the sum of the four sides.

24. A

25. D, For the dice to equal 8, the following combinations are possible: (1,7), (2,6), (3,5), (4,4)~ (7,1), (6,2), (5,3), and (4,4). Of those combinations, 2 of the 8 show the same number on both dice. Therefore, the probability is 2:8, or 1:4.

26. D, Student needs to divide the numerator by the denominator in each fraction.

27. B, Student needs to multiply each number by the decimal equivalent of each percent.

28. C, Student needs to divide 45 by 3. Student then needs to divide 30 by the answer obtained from step I.

29. C, Students need to add up the minimum number of multiple choice, true false, and essay questions for the minimum amount of problems required and the maximum number of multiple choice, true false, and essay questions for the maximum amount of problems.

30. D, Student needs an understanding of manipulating algebraic equations.

31.E

32. B, Student needs to understand that inches are larger than centimeters, , so the answer would be smaller expressed in inches than when expressed in centimeters. Furthermore, the student needs to understand that there are 12 centimeters in 1 inch.

33. C

34. D, Student needs to divide 5 by .0005 to solve for R.

35. E. Student needs to multiply 84 by 4 to get the original number and then multiply by 4 again to get the correct answer of eggs needed

36. D. Student needs to understand that to find the area of a rectangle. one must multiply I x w.

37. B

38.A

39. E, Student needs to multiply 5 times 4. Student then has to multiply the product by 5,280. which represents the number of feet in one mile.

40. D. Student needs to multiply 18 by 20 and then divide by 3.

ANSWER KEY FOR TEST #2

1. R Student must divide the numerator by the denominator.

2. C, Student must understand that there is a 2 out of 3 chance of spinning a 1 or 2.

3. C, Student must understand that the measurement would be greater when expressed in centimeters, because a centimeter is smaller than an inch. A centimeter is 12 times smaller than an inch, so the measurements would need to be multiplied by 12 to obtain an answer.

4. D, Student must understand that A is already known since part of this figure is a rectangle. If B were known, the base of the triangle would be known, so the area of the triangle could be determined. If C were known, the student could use the formula a + b = c to determine the base of the triangle.

5. A, Student must understand that the ratio needs to be reduced. The ratio can be reduced by dividing both sides by 20, which would reduce the ratio to 4:].

6. D, Student must understand that A is incorrect because 43 is not 20% of 21O. B is incorrect because averages are not determined by subtracting numbers. e is incorrect because "sum" refers to addition. Lastly, E is incorrect because

7. D, Student must first determine T by subtracting 140 by 180 . The student then needs to add together T and V and subtract the answer from 180 .

8. C, Student must understand that A can be determined by adding the amount of miles each person ran. B can be determined by dividing 8 miles by 3 days. D can be determined multiplying 5 miles by 4 days. Finally, E can be determined by subtracting 8 from the total number of miles Jane ran.

9. R Student must understand how to manipulate algebraic equations.

10. B, Student must divide 875 by 175

] 1. D, Student must have an understanding of decimal place value.

12. B, Student must understand that a prime number is a number that is not the product of any other numbers besides) and itself.

13. E, Student needs to divide 1 by 16

14. D

15. E

16. A, Student must first multiply $2.19 by 3. Student must then subtract that answer from $10.

11. A

18. A, Student needs to multiply 2 x 6 and 2 x 8, add the products together, and divide by 4.

19. C~Student must divide 255 by 340.

20. D, Student must understand that there are 8 possible outcomes of flipping a coin 4 times. Therefore, for a coin to land heads up 3 out of 4 of the tosses, the probability is 3:8.

21. E, Student needs to divide 23,000 by .023.

22. B, Student needs to divide 420 by 525.

23. E, Student needs to know the formula for the area of a triangle is 1l2bh.

24. C, Student must know that there are approximately 3 feet in a yard, so the 10 must first be multiplied by 3. Student must also know that there are 12 inches in a foot, so the answer then needs to be multiplied by 12.

25. A

26.C

21.D

28. C, Student must understand that when a number's multiplicand is increased, the answer increases by the amount of the number.

29. C, Student must have an understanding of area.

30.B

31. B

32. B, Student must have a basic concept of the metric system.

33. C

34.E

35. B

36. D. Student must understand that "product" refers to multiplication.

37. E. Student must divide 120 by 4.

38.B

39.B

40. C. Student needs to subtract 17 from 75

MEASUREMENT QUIZ

1. What is the equation for the perimeter of a square?

2. What is the formula of the area of a triangle?

3. What is the area of a rectangle?

4. Which diagram represents the radius of a circle? __ diameter? --

5. What is the circumference of a circle?

6. How many feet are in a yard?

7. How many inches are in a foot?

8. How many yards are in meter?

9. How many milliliters are in a liter?

to. How manydecigrarns are in a decagram?

]I, How many kilometers are in a meter?

12. How many ounces are in a pound?

]3. How many pints are in a quart?

14. How many cups are in a pint?

Answer Key- Measurement Quiz

L 2(1+ w)

2. 1/2bh

3.) xw

4. a,b

5.2 r or d

6.3

7.12

8. approximately 1

9. 1,000

10. 100

11. .001

12. 16

13.2

14.4

Percent Worksheet

Change each of the following percents to a decimal.

(1) 85%	(2) 15%	(3) 35%	(4) 100%	(5) 87.5%
(6) 135%	(7) 67.2%	(8) 9%	(9) 46.9%	(10) 7%
(11) 2.5%	(12) 92.6%	(13) 10%	(14) 200%	(15) 1%

Change each of the following decimals to a percent

(1) .50	(2) .98	(3) 1.00	(4) .03	(5) .67
(6) .025	(7) 2.50	(8) .63	(9) .01	(10) .75
(11) .032	(12) .33	(13) .25	(14) .05	(15) 1.50

Word Problems:

1. The grocery bill came to $134.50 without tax. Assuming the tax rate for food items is 6.5%, what would the grocery bill come to after tax is added?

2. Sue's dinner bill came to $12.85. Her waitress had been very good, so she wanted to leave a 15% tip. How much money should Sue leave for a tip?

3. Bill bought a tennis racket for 35% off of the regular ticket price of $220. How much did Bill pay for this racket?

4. Jenny's new dress was on sale for 25% off the regular price. She bought the dress for $90. How much was the dress originally?

ANSWER KEY FOR PERCENT WORKSHEET

Changing a percent to a decimal (Divide each percent by 100)

1. .85
2. 15
3. 35
4. 1.00
5. 876
6. 1.35
7. 672
8. 09
9. 469
10. 07
11. .025
12. 9205
13. 10
14. 2.00
15. 01

Changing a decimal to a percent
(Multiply each percent by 100)

1. 50%
2. 98.2%
3. 100%
4. 3%
5. 67.2%
6. 2.5%
7. 250%
8. 63%
9. 1%
10. 75%
11. 3.2%
12. 33%
13. 25%
14. 5%
15. 150%

Word Problems

1. $136.05, Student should multiply $134.50 by .065. Student should then add the product to $134.50

2. $1.93, Student should multiply $12.85 by .15

3. $143, Student should multiply $220 by .65

4. $120, Student should divide 90 by .75

Working With Numbers

Rounding

1. Round 2.454 to the nearest hundredth.

2. Round] 05.72 to the nearest tenth.

3. Round 206 to the nearest ten.

4. Round 1)55 to the nearest bundred

5. Round 2016.4023 to the nearest thousandth.

6. Round 36.74 to the nearest one.

7. Round 5465 to the nearest thousand

Adding Fractions (Express each answer in decimal form)

1. $\frac{1}{10} + \frac{1}{100} =$

2. $\frac{1}{100} + \frac{1}{1000} =$

3. $\frac{1}{1000} + \frac{1}{10,000} =$

4. $\frac{1}{10} + \frac{1}{10,000} =$

5. $\frac{1}{10} + \frac{1}{1000} =$

Working With Numbers Answers

Rounding

1. 2.45
2. 105.7
3. 210
4. 1300
5. 2016.402
6. 37
7. 5400

Adding Fractions

1. .11, Student should add .100 + .010

2. 011, Student should add .010 + .00]

3. 0011, Student should add .0010 + .0001

4. .100] Student should add .1000 + .0001

5. 101, Student should add .100 + .001

MATHEMATICAL PROBLEMS

SOLVE FOR X

1. 5x-1I2 = 10

2. 213x + 9 = 6

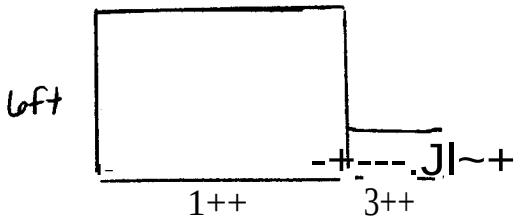
3. 4(6x) + 6(8) = 96

4. 1212x- 5y = 36

5. 16x+ 3 =9

FIND THE AREA OF THE FOLLOWING FIGURES

1.



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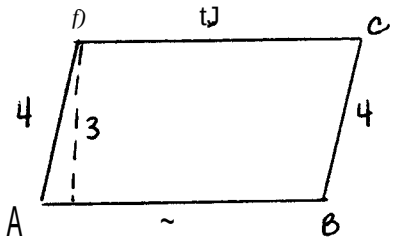

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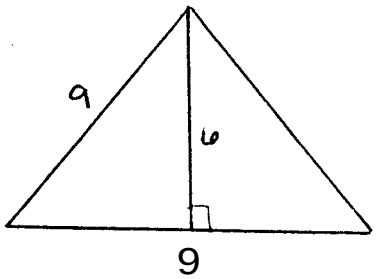


MATHEMA TICAL PROBLEMS

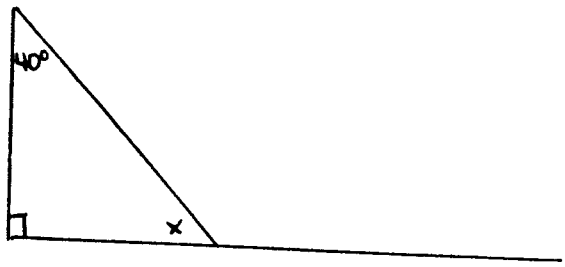
1. Which of the following is a prime number?

   a. 24 b. 21 c. 29 d, 9 e. 33

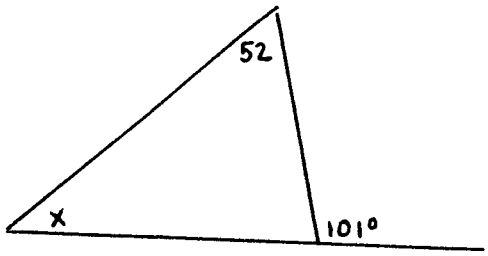
2. Which of the following is a composite number?

   a. 7 b. 9 c. 11 d 17 e. 57

3. What is angle X in degrees?



4. What is angle X in degrees?



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MATHEMATICAL PROBLEMS ANSWERS

Solving for X

1. $5x - 112 = 10$
   $x - 1/2 = 10/5$
   $x - 1/2 = 2$
   $x = 2 + 1/2$
   $x = 2\ 112$

2. $2/3x + 9 = 6$
   $2/3x = 6 - 9$
   $2/3x = -3$
   $x = 3/2x(-3)$
   $x = -9/2$

3. $4(6x) + 6(8) = 96$
   $24x + 48 = 96$
   $24x = 96 - 48$
   $24x = 48$
   $x = 48/2$
   $x = 24$

4. $12/2x - 5y = 36$
   $1212x = 36 + 5y$
   $6x = 36 + 5y$
   $x = \frac{36 + 5y}{6}$

Find the Area

1. $7 \times 6 = 42$
   $2x3 = 6$
   $42 + 6 = 48$ ft

MATHEMATICAL PROBLEMS ANSWERS

2. 6x4=24

3. $6^2 + 4.5^2 = c^2$
$36 + 20.25 = c^2$
$\sqrt{56.25} = c$
$7.5 = c$
$7.5 \times 2 =$ area of triangle
$15 =$ area

Prime and Composite

1.c

2.b

Angles

3. $40° + 90° = 130°$; $180° - 130° = 50°$

4. $180° - 101° = 79°$; $79° + 52° = 131°$; $180° - 131° = 49°$

ANSWER "TIMES AS:MUCH"

1. If a tree was measured in feet, the length expressed in inches would be?

2. If a building was measured in meters,, the length expressed in feet would be?

3. If a foot was measured in inches, the length expressed in centimeters would be?

4. If the length ofa beetle was expressed in millimeters;, the length expressed in decimeters would be?

5. If a field was measured in yards, the length expressed in feet would be?

6. If a man was measured using inches, the length expressed in feet would be?

7. Tfa highway was measured in meters, the length expressed in kilometers would be?

ANSWERS

1. 12 inches = 1 foot, so 12 times as great

2. 1 meter = 3 feet, so 3 times as great

3. 12 centimeters = 1 inch, so 12 times as great

4. 1 decimeter = 100 millimeters, so 1/100 as great

5. 3 feet = 1 yard, so 3 times as great

6. 12 inches = 1 foot, so 1/12 as great

7. 1000 meters = 1 kilometer, so 1/1000 as great

The mathematics portion of the Praxis examination assesses eleven major skill areas. These major skill areas consist of whole numbers, decimals, fractions, percentages, geometry, charts, metrics, logic, algebra, and multiple step problems. A sequence of skills are assessed within each major skill area. The break down of each major skill area, the components of each skill which are assessed, and the number of problems that are given for each component are listed below:

MAJOR SKILL AREA	SKILL COMPONENTS	NUMBER OF PROBLEMS
Whole Numbers	Place Value	2
	Addition	1
	Subtraction	2
	Multiplication	2
	Division	2
Decimals	Place Value	1
	Addition	3
	Multiplication	2
Fractions	Ordering	2
	Converting to decimals	1
	Addition	1
	Division	2
	Proportions	1
Percentages	Given percent	2
Geometry	Area	2
	Perimeter	1
Charts	Reading	5

MAJOR SKILL AREA	SKILL COMPONENTS	NUMBER OF PROBLEMS
Metrics	Comparing	2
Logic		5
Algebra	Basic Operations	5
Multiple Steps	2-steps	5

To consolidate the types of problems given further, a group oftbree individuals, , consisting of a Special Education professor and two education majors from Northern Illinois University, devised a list offive categories to represent each problem type. These categories consist of number sense, measurement, , understanding of practical applications of numbers, deductive reasoning, , and mathematical relationships. Listed below is a chart with each category listed, a brief explanation for each category, and one example representing each category.

SKILLAREA	CHARACTERISTICS	EXAMPLE
Number sense	Problems requiring a knowledge of number systems, the ordering of numbers, and the relationship between numbers.	1/100 + 1110,000 = ?
Measurement	Problems requiring an understanding of the principles of measurement Requires understanding of the English and metric systems and an understanding of perimeter, area, and circumference	What is the perimeter of a rectangle with a length of9 and a heighth of3.5, in inches?

Practical Applications	Problems apply mathematical concepts in a series of real world applications.	The department store had a sale for 20% off of all coats. Don bought a coat on sale for $120. What was the original price on the coat?
Deductive Reasoning	Problems require the use of logic.	If Bob is 17 and two years ago he was three times Mary's current age, how old is Mary today?
Math Relationships	Problems require an understanding of mathematical conversions, mathematical comparisons, and algebraic equations.	Solve for x in the following equation: $2x + 14 = 18$

When meeting a tutee for the first time, it is important that introductions are made and a few minutes of sharing about common interests and bobbies are allowed to help both the tutor and the tutee to relax. After introductions are made, the rest of the first session should be dedicated to administering the practice mathematical portion of the Praxis examination. Therefore, it is very important that the first meeting, as well as the remainder of the sessions, be beld in a quiet and comfortable location, preferably in a neutral environment, sucb as the library. After the initial session, it is the responsibility of the tutor to take the examination home and score it After the scoring bas been completed, the tutor should attempt to analyze the errors obtained by determining which category the problem falls under. This will help the tutor to decide which types of problems to focus on during tutoring sessions.

During the next tutoring session, the tutor should go over the errors with the tutee. The tutor should go through each error step by step with the tutee to determine if it was actually an error in understanding of the problem or a simple error in mathematical calculation. This explanation may take the entire tutoring session, so additional problems and worksheets may not be needed.

By the third session, the tutor should have worksheets and sample problems representing the problem types that were missed on the initial examination. It is not necessary to focus on problem types in which only one or two problems were missed. A tutor's focus should be on the problem types that present the most difficulty.

When guiding a tutee through a problem, a tutor should follow several important guidelines so that the problem is presented clearly. The questions asked should require more than a simple yes or no answer so that the tutor has a clear picture of the tutee's reasoning

abilities. The tutor is there to guide the tutee, and not answer the problems that are designed for the tutee. Therefore, too much information should not be given when guiding a tutee through a difficult problem. Immediate feedback should be given so as to reinforce the correct strategies. It is important for the tutor to praise correct answers and to refrain from denouncing incorrect answers. Patience is also incredibly important. If a tutee does answer a problem incorrectly, the tutor should attempt to have the tutee explain the train of thought that led to the answer.

It is a tutor's job to determine the mastery of a skill. Since the Praxis examination does not award partial credit, a tutee must solve the problem with 100% accuracy. Therefore, a tutor can not provide "too much" practice of a particular skill. Homework should be given to those tutees that seem motivated and willing. This will help to reinforce the skill with the tutee.

Tutees should be given more than one way to solve a problem, if more than one method is available. For example, some students benefit from drawing pictures to represent the given problem, whereas other students benefit most from learning rules to apply to problems.

Many students have no difficulty solving the mathematical problems in the unstructured, pressure-free environment of the tutoring session. Test anxiety is in some cases the main reason tutees do not pass the mathematical portion of the Praxis. It is important for tutors to provide strategies for their tutees to use when they are placed in a testing situation. To begin with, tutees should be advised not to rush into the test. Before working any problems, the tutee should glance over the entire test to make sure there are no missing pages. The tutee should also quickly calculate the approximate time that can be afforded on each problem. The tutee should work each problem in order. If the tutee comes across a difficult problem, a check should be placed beside the question and the tutee should continue with the exam. When the test is

completed, the tutee should go back to the checked problems and try to work through them. An effort should be made to answer every problem. since guessing is not penalized on the Praxis.

Tutees should also be provided with problem solving strategies to use. First of all. tutees should be advised to read each problem twice. This will prevent many careless errors from occurring. Students should not hesitate to write down the information provided or to make a picture of the given information. If an equation is given which requires algebraic procedures. the tutee should put in familiar numbers to see if the equation is true. Further. if the tutee forgot a procedure to figure out a problem. the tutee should choose an answer first and try to figure out the procedure from there.

Lastly. the tutee should have a few strategies to choose from to check the answers. One method would be for the tutee to substitute the answer for the unknown in the problem to see if the answer works. Another method would be for the tutee to re-work the problem using an alternate method. Lastly. the tutee should estimate the answer before working the problem.

Tutors should come to each session with enough material to cover two tutoring sessions in case the tutee works through the given problems quickly. Before the tutee is scheduled to take the Praxis examination. the tutor should administer another practice exam. This exam should be given after the tutor is fairly confident that the student will pass the exam.

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